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WORK OF THE CZECHOSLOVAK ACADEMY OF SCIENCES

[Comment: This report summarizes an article by Academician F. Sorm, chief scientific secretary of the Czechoslovak Academy of Sciences.]

The first year of existence of the Czechoslovak Academy of Sciences was one of intense organizational activity. The generalized reports of the academy, which contained the results, reports, and sessions of the academy's various sections, served as the basis for the scientific work plan of 1953.

During the past year, the Presidium of the academy has been developing a long-range plan for scientific work, designed to assist the development of the economy of the country as a whole. Particular attention has been paid to selected sectors of science. For instance, at a combined meeting of the Presidium and the Technical Sciences Section, a number of resolutions were adopted which concerned the fields of interest of the section. It must be noted, however, that sections were at first too busy with organizational problems, and concentrated on scientific activity only after much criticism by the Presidium.

The Central Publishing House of the academy was formed to lead and control the publication of scientific and popular scientific journals. At present, 43 journals are published, 39 of them of purely scientific interest and four containing popular scientific materials. Book publication, on the other hand, has been much less successful. Several outstanding works have been published, but so, unfortunately, have several works which do not meet the standards imposed by higher scientific organs in Czechoslovakia.

One of the most important tasks of the academy is the popularization of science. The majority of the members of the academy actively participate in the work of the Society for the Propagation and Dissemination of Political and Scientific Knowledge, but the academy still does not influence the work of the society to a sufficient degree.

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Great attention has been paid to the training and selection of young cadres, and scientific institutes have had considerable success in training aspirants. As a result, two aspirants were awarded State Prizes in 1953, while 59 others were rewarded by the Presidium of the academy for the successful solution of scientific problems. It is also worth noting that of all the State Prizes awarded in scientific fields in 1953, nearly 70% were awarded to members and scientific associates of scientific institutions of the Czechoslovak Academy of Sciences.

In the field of mathematics, a number of first-class theoretical results have been obtained, particularly in topology and differential geometry. The Laboratory of Mathematical Machines has invented new types of machines, and has given the results of its investigations to industry, which is already producing the first series.

The Institute of Technical Physics has been working on thermoelectric phenomena in semiconductors, and their successes in this field will have a great influence on weak-current electrical engineering. The Physics Institute has completed the design of a spectrograph for beta radiation.

Geological investigations have been devoted to study of industrial raw materials. Complex study has also been carried out on the best place to establish a new city in Ostrava Kraj and on the raw materials with which to construct it, and on the planning of a reservoir for the new city.

Chemical institutions of the academy have achieved some theoretical and practical results, particularly in the design of automatic instruments for indicating harmful substances in the air, such as carbon monoxide in mines. The Laboratory of Physical Chemistry has developed a spectrometer for the analysis of extremely complex mixtures of substances. The Institute of Organic Chemistry has developed a faster and more economical method of producing "Chloramphenicol," and has investigated the production and action of other synthetic antibiotics. Workers in the technological department of this institute have developed new ways of preparing the raw materials for plastics with silicon compositions, and have also obtained good results in the preparation of dienes, the crude material for the production of synthetic rubber, by the use of by-product phenols. Workers in the biochemical department have developed new ways of preparing certain amino acids, and have made some valuable observations on the action of antibiotics on bacteria.

In the field of biological sciences, much has been achieved, including the discovery of several new carriers of infectious diseases. The Laboratory for the Study of Higher Nervous Activity has designed a new machine for measuring the activity of the heart, known as the "Spaticardiograph" (Spatsiokardiograf).

One of the largest institutes working in the field of technical Sciences is the Institute of Theoretical and Applied Mechanics, which has been assisting industry during the past year by making the calculations for special designs. The Electrical Engineering Laboratory has solved several theoretical and practical problems connected with the physical processes in transformers. The Mechanical Laboratory has had great success in designing a new and more economical internal combustion turbine for transport machines.

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